

Mongolia

Mongolia
Preparatory Survey on BOP Business
on Agricultural Income Generation
(through Provision of Fresh and Safe
Vegetable to Ulaanbaatar Citizens)

Final Report

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Japan International Cooperation Agency

Farmdo Co., Ltd.

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EXECUTIVE SUMMARY

1. Survey Overview

1.1 Background and objective of the survey

(1) Background

In Mongolia, agriculture is the key industry which accounts for 14.5% of GDP and 29.8% of the working population (Mongolian Statistical Yearbook by National Statistical Office: NSO, 2013). Lands used for agriculture cover 130,540,000 hectares, 84% of Mongolia's whole land area. However, 99% is native rangeland and the land area suitable for cultivation is 1%. Agriculture in Mongolia has limitations, such as low productivity, severe climatic conditions, and an undeveloped finance system.

Low productivity is associated with shortages of agricultural machines, the use of low-quality seeds, chronic shortages of water caused by aging irrigation systems, and the inadequacy of technical guidance system. Natural constraints are imposed by precipitation deficiency and limits to the growable crops and cultivation periods. In financial terms, farmers are unable to secure enough money to operate due to the undeveloped finance systems.

The current annual consumption of vegetables per capita in urban areas is approximately 25 kg, and consumption is predicted to increase as a consequence of the rising economic level and associated changes of dietary habits. Although people have concerns regarding the safety of foods imported from China, the low and middle class have no choice but to buy low-cost Chinese vegetables. It would be advantageous for consumers in urban areas if domestic vegetables were sold at lower prices and over a longer period due to extension of the cultivation period.

(2) Objective

The "Preparatory Survey on BOP Business on Agricultural Income Generation (through Provision of Fresh and Safe Vegetable to Ulaanbaatar Citizens)", hereafter referred to as the "Survey," describes models of agricultural production, distribution, and sales by the

Base of the Pyramid (hereinafter referred to as the “BOP”) by producing seedlings using a sunlight plant factory. This BOP business scenario aims to stimulate the agricultural industry in such a way that instead of the intervening wholesale and retail processes, farmers realize added value, becoming holistically involved not only in producing agricultural and livestock products (primary industry) but also in food processing (secondary industry) and distribution and sales (tertiary industry). The target BOP is small lot farmers who are unlikely to make a large-scale initial investment. The Farmdo Corporation (hereinafter referred to as the “Farmdo”) aims at quality improvement of agricultural products, promotion of branding, and vegetable production by developing a sunlight plant factory that is inexpensive and suitable for Mongolia and by supplying it to consignment-contract farmers (hereinafter referred to as the “contract farmers”) together with guidance in agricultural techniques. Farmdo also aims to contribute to increasing the income of consignment-contract farmers by having farmers process agricultural products and sell them in direct-sales markets. Farmdo also aims to sell agricultural products at appropriate prices to consumers.

1.2 Survey methods

The field research stations are located in the Songinokhairkhan and Nalaikh districts, where products can be delivered within 1 h to Ulaanbaatar (hereinafter referred to as the “UB”). In particular, pilot production took place in the Songinokhairkhan district on the so-called “WEST farm.” First, information gathering and marketing research were conducted from October 2013 as a first field survey. Secondly, research on developing business models was conducted as a second field survey. Japan International Cooperation Agency (JICA) Study Team (hereinafter referred to as the “JICA Team”) developed a potential business model and investigated the possibility of increasing farmer income by wintering strawberry seedlings in 2013 and by producing, cultivating, and selling vegetable seedlings in 2014.

2. The summary of the survey results

2.1 The conclusion of the survey

(1) Knowledge and propriety of commercialization

The business model of this project aims to increase the income of farmers by vegetable production from seedlings and directly selling products by eliminating the intervening wholesale and retail processes. In Japan, the Farmdo has been successful in creating a new

value chain model in which, in contrast to the conventional value chain, which has many middle processes and commissions, farmers and producers increase their income by setting prices and directly selling.

In Mongolia, the government is promoting domestic vegetable production for increasing farmers' income. There are many low-priced vegetables from China in the market, but many people are concerned regarding the food safety of those products and believe domestic vegetables to be safer. In this respect, the business model in this project fits well with the development policy and market requirements.

There are large differences between Japan and Mongolia in the vegetable production environment, including the severity of the winter, technical level of farmers, income level, and geographical conditions. Therefore, it is necessary to evaluate the possibility of implementing the project after careful assessment whether the Farmdo model can be realized and, if so, what kind of efforts will be required.

The survey was analyzed with respect to the demand and the supply. Regarding the supply, there are three components: the production of seedlings; production of vegetables and strawberries; and processing, distribution, and sales of products.

In terms of demands, we inferred that there are large expectations on consumers, such as UB citizens, restaurants, and hotels, for the safe domestic vegetables instead of safety-concerned Chinese vegetables through the survey.

In terms of the supply, first, with respect to the production of seedlings, it is essential to include a supply of seedlings in the project, given that a lack of good seedlings will constrain the expansion of vegetable production. It would be most suitable to gradually expand the production and supply of seedlings as farmers learn cultivation techniques through agricultural production.

Second, with respect to production, the survey includes not only vegetables but also strawberries, which command high price and may yield high incomes. Although there is domestic production of strawberries in Mongolia, the demands and supplies are imbalanced. For growing vegetables and strawberries, it is necessary to consider the severity of the environment and the suboptimal cultivation techniques. In the WEST farm, from 2013 to 2014, there was damage from inappropriate management of fertilizer, water, disease, and pests. In addition, excessive application of fertilizer was observed that could lead to future damage. The process of developing the project requires continuous efforts to improve the technical level of farmers in Mongolia such as training courses. It appears possible that the project will develop if necessary measures are taken, such as insulation of greenhouses against cold, application of overwintering techniques, and preparation of overwintering cellars.

The survey revealed many farmers in the Songinokhairkhan and Nalaikh districts. Therefore, we inferred that the BOP group can join this project. On the other hand, the problems are to improve agricultural techniques and enhance means of transportation. It is necessary to take actions to support farmers. If there were government support, the effects would be doubled.

Third, with respect to processing, distribution, and sales of products, during this survey pilot business activities were performed but in the small scale due to time restrictions. As

planned in the beginning, the vegetables and strawberries were sold at EVERYDAY supermarkets operated by EVERYDAY INTERNATIONAL (hereinafter referred to as the “EVERYDAY”). With respect to food processing, the plan is that the BOP group generates income by processing vegetables that cannot be sold. With respect to the distribution, there are two routes: one is for Everyday Farm to purchase the full harvests from the farmers and the other is to provide sales space to support direct sales by farmers.

For the first, it would be necessary to establish quality standards for vegetables and strawberries offered for purchase. For the latter, transportation would be the challenge.

Based on the above discussion, we consider that it is possible to implement this project by taking various measures.

(2) Evidence of the judge for the propriety of commercialization

There are two bases to judge for the propriety of commercialization: the demand and the supply of vegetables and strawberries.

First, with respect to the supply side, UB citizens of about 1,370,000 populations are customers. The customers are not only UB citizens but also an increasing number of foreigners involved in the mineral-resources business. The number of customers such as restaurants and hotels is also increasing because of the changes in food culture associated with economic growth, and this trend is expected to continue.

Furthermore, Chinese vegetables are available in large quantities in the market in UB and many Mongolians have no choice but to buy those vegetables because of the low price, although they have safety concerns regarding them. Increasing income levels associated with economic growth has brought a rising awareness about health, and this trend too is expected to continue.

On the supply side, there are three important elements: human resources, materials, and finance.

First, management resources, which are central to human resources, are mainly represented by the staff of the Everyday Farm Company (hereinafter referred to as the “Everyday Farm”). The chief executive officer is Ms. Altantsetseg, a competent executive who managed and brought the Everyday Supermarket to an important income stream for the BRIDGE Group, the parent holdings, by operating seven stores in UB. Her subordinate farm manager and staffs also have a passion to grow vegetables and strawberries and are highly motivated to learn new skills. Most of the BOP farmers had grown vegetables without having learning how to grow them properly, but when they participated in the survey seminars, they showed their strong capabilities for learning. According to an expert of the JICA Team, they showed even higher concentration than Japanese farmers. Thus, the core human resources are capable and highly motivated. We accordingly considered that one of the most important conditions for implementing this project was fulfilled.

Second, with respect to materials, Japanese techniques and investment are essential for supplying safe and cheap vegetable to compete with Chinese vegetables in Mongolia. In this

regard, Farmdo and KOMORO NUBOBIKI ICHIGOEN Corporation (hereinafter referred to as the “KOMORO”) play an important role as Japanese capital investor and collaborator. Support from Farmdo would be of great advantage with respect to not only growing skill but also introducing the system of direct sales by farmers with which Farmdo has had success in Japan. For strawberries, KOMORO can play a leading role in increasing the impact of the project by supporting cultivation techniques, taking advantage of its experience in developing strawberry production not only in Japan but also overseas. For material procurement, these two companies are key factors.

In terms of financing, Farmdo and EVERYDAY co-established the Everyday Farm by investing US\$50,000 each. Later they added US\$500,000 each to cover the initial investment cost, which is estimated approximately US\$900,000. In terms of revenue, the feasibility of this project has been verified. The financial internal rate of return (FIRR) has been estimated as 4.9%, a rate judged as a satisfactory level for capital investors considering this project as BOP business.

2.2 Conceivable business model

(1) Business model based on research results

1) Comprehensive vision

A key feature of this model is to develop mechanisms such that consumers can be provided with safe and cheap vegetables and strawberries, whereas producers can realize higher incomes by eliminating the intervening wholesale and retail processes. Some activities had already started when this survey was conducted.

2) The model for producing seedlings and vegetables

- A. To gain income by working on the farm of Everyday Farm
- B. To increase the income of farmers, who are already experienced with agriculture, by providing good seedlings to improve quality and increase yield of vegetables .
- C. To support BOP group without land as contract farmers by leasing the land and by improving the cultivation techniques through education and training.

The consensus from the districts of Songinokhairkhan and Nalaikh on the cooperation of leasing the land was already obtained and Mongolian government and UB is requesting the cooperation in similar ways. This project will respond to the requests of government and city offices by adding not only production facilities but training facilities to the West and East farm. Everyday Farm and both administrative districts have reached an agreement that Everyday Farm will be offered on loan the land in both districts and will lease the land to BOP groups.

3) Model for distribution and sales

A model for producing seedlings in a closed-plant factory and sales to farmers, setting a price on the farmers' produce, and placing it in a distribution chain are considered to be an important pillar of this project.

(2) Project execution schedule

From 2013 to 2014, the main business target is the production of vegetables and strawberries in the WEST farm. From 2015, the project will start the supply of vegetable seedlings to the contract farmers and also the development of the EAST farm will take place.

(3) Remaining tasks and its countermeasures for implementing the project

Remaining tasks and measures for implementing the project are organized in three parts: seedling production and supply, vegetable and strawberry production, and processing, distribution and sales as described below.

Production and supply of seedlings

In pilot growing during the survey, sufficient seedlings could not be produced except for own farm use and seedlings could not be provided to contract farmers. To produce seedlings having high marketability, the task is to introduce a closed plant factory or seedling terraces and the procurement of seeds. However, introduction of seedlings without careful consideration risks creating a demand for good seedlings that exceeds the ability to supply them. It is necessary to improve the technical seedling production level and expansion of seedling sales for the high quality and stable supply of seedlings to the contract farmers.

Production of vegetables and strawberries

The use of groundwater-dependent irrigation systems for vegetable production in greenhouses may lead to unproductiveness or salt damage from excessive fertilization and irrigation if cultivation is continued without accurate knowledge of water management.

It is necessary to improve the technical level of fertilization and irrigation by exchanging information with the Mongolian National Agricultural University, offering training sessions in cooperation with Farmdo and so on as countermeasures. In addition, given that mite damage occurred during pilot cultivation, proper use of agricultural chemicals must be observed but measures on human factor engineering should also be implemented. At full scale, the project will promote the introduction of Good Agricultural Practice (GAP) and establish a safe and reliable cultivation system. It will also take full advantage of Farmdo's knowhow to train the contract farmers and improve their use of consignment marketing.

Processing, distribution, and sales

To enhance the marketability of processed food, product development that reflects the likes of customers should be performed. For the materials for distribution, the use of local materials, and creation of trial packages, seminars on processing and sales should be conducted for training farmers. Two systems are planned for implementation of direct sales by farmers: the purchase of entire crops by Everyday Farm and the provision of spaces for direct sales for farmers. Quality standards for purchasing and rules for providing spaces should be drawn up. Transportation of products of the BOP group will also be a key issue.

2.3 The plan for the value chain

(1) Value chain

The biggest difference between the proposed value chain and the conventional value chain is the provision of consumers with safe and cheap vegetables and strawberries and of producers with increased income from eliminating the intervening wholesale and retail processes. The value chain starts with producing seedlings. The seedlings produced by Everyday Farm are grown and harvested on the farm managed by Everyday Farm and at the same time sold to contract farmers. Crops with higher added value in large quantities, such as strawberries, are sold on consignment contract requiring the purchase of the whole consignment. For food processing, distribution and sales are also conducted based on consignment contract.

(2) Production plans

1) The WEST farm

The WEST farm has an area of 24 ha and is flat land suitable for agriculture, facing the national road. Described below are the activities on the WEST farm.

- Growing and sale of seedlings
- Growing vegetables and strawberries in greenhouses (15 houses of 240 m² greenhouses)
- Growing vegetables outdoors (11.8 ha in total)
- Conducting training courses in growing and processing skills for the BOP group

2) The EAST farm

The EAST farm is located at a key traffic junction facing a high-travel national road. There are already four gasoline stations and a convenience store by EVERYDAY that serve as landmarks for drivers. For this farm, developing a roadside rest house, a produced stand, and farms for tourists is included in the current plan as well as leasing nearby farmland from the Nalaikh district for use as farming sites by BOP farmers who do not have land.

(3) Procurement plan for primary material and equipment

In mineral-rich Mongolia, there are abundant fuel resources that are readily purchased in bulk at low or reasonable prices. However, most materials and equipment must be imported,

and the selection is limited. Considering the quality of the materials and equipment in Mongolian and Japan, it is advisable to purchase the products from Japan since the price is almost same while the quality is higher in Japanese products.

2.4 Plans for resources

(1) Plan for human resource development

Everyday Farm plans to add more staff members according to the expansion of area of cultivation and increased numbers of contract farmers in 2015. Creation of jobs is expected since BOP is primary target for employment as regular employee and seasonal farm workers. For agricultural training, the Farm Club Corporation (hereinafter referred to as the “Farm Club”), related company of Farmdo, has accepted three candidate managers with Technical Intern Training Program (hereinafter referred to as the “TITP”). After the acquisition of technical skills, they serve as the trainers for the contract farmers and managers of the farms. Everyday Farm will select and dispatch the candidates regularly to Japan using TITP. On the other hand, a training program has been carried out for the human resources of farm managers as short period training. The short period training takes place during winter season when the farming activities almost stops in Mongolia, and the maximum period of stay is three months. The trainees visit Farmdo and KOMORO to learn the high-tech agriculture in Japan: Farmdo is for learning the basic techniques of production of strawberry and vegetable, and KOMORO is for learning the highest technologies in terms of strawberry production. Moreover, the trainees have site-visits to the farms managed by GAP standards for the establishment of safe brands of products.

(2) Plans for the organization of BOP farmers

It is essential to support the organization of BOP as it will increase the impacts of project when compared to the scenario that each BOP will engage in the business model individually. During the process of BOP organization, Everyday Farm will lead the process while All Life Line Net, a Non-Profit Organization, will give advice with its networking in Mongolia.

(3) Financial analysis

The sales of products are defined as business income and the project is examined and analyzed based on the sales of pilot growing and selling. It is considered that the business model will have profitability once the techniques of production are established. Furthermore, it is concluded that realization of contract sales will become the stable source of profit and contribute to the stability of business, while it is beneficial to farmers by income generation by eliminating the intervening wholesale and retail processes.

Based on the above financial plan, Financial Internal Rate of Return (FIRR) is computed

to be 4.9%.

Basically the source of project fund will be secured by self-funding of Everyday Farm. At the same time, the Two Step Loan is potential source of fund in case there is an unplanned necessity of funding.

2.5 Environmental and social consciousness

(1) Environmental consciousness

Within this business, there is a possibility of exerting environmental and social impacts by the construction and development of vegetable and strawberry production facilities and outdoor gardens of the WEST (24 ha) and EAST (10 ha) farms in the Songinokhairkhan and Nalaikh districts. In this project, there is no plan fitting the categories of environmental pollution, involuntary movement of inhabitants, large scale development, and irrigation promotion, contained in the environmental guideline of JICA (April 2010).

Wells are planned for irrigation and domestic use. For the digging of wells, before the actual operation, we have submitted applications to the Ministry of Nature, Environment and Green Development in Mongolia. The application describes as environmental concerns 1) concern for the environment and green areas, 2) treatment of sewage, and 3) use of recycled water, and this survey business passed the examination.

As the general concerns regarding impacts on local communities and surroundings, soil damage may result from increased usage of chemical fertilizers and pesticides. The farms in this project are highly unlikely to experience damage, given that the project aims at sustainable agriculture using organic fertilizers. With respect to pesticide, standard doses are strictly observed and it will not be applied immediately before harvest. The project aims to produce safe vegetables and strawberries by introducing GAP to the management of the farms.

(2) Social consciousness

With respect to social consciousness in this project, there is no feature that fits the categories of culture and customs, such as caste, religion, and social minorities, contained in the JICA guidelines. Rather, it is expected that this project will bring advantages to society as a whole by pursuing the objective of increasing the income of the BOP group.

2.6 The possibility of collaboration with JICA projects

This project proposes a developmental model in the field of agriculture in the context of Mongolia. There are strong possibilities that the project can collaborate with not only BOP farmers but other JICA projects in the field of agriculture, community development, poverty reduction, and life improvement. Moreover, in nearby countries sharing the cold climate of Mongolia, it is possible to stimulate the agricultural industry using this project business

model.

A collaboration with the Ministry of Agriculture in Mongolia has already begun. With the 10 greenhouses constructed in the fall of 2013 using financial loans from the foundation managed by the Ministry of Agriculture, the project was able to start the survey smoothly with the initial investment.

The JICA Team has met and considered the possibility of collaboration with the Saitama University, which has conducted a project of “Livelihood Enhancement Project in a Ger District in Ulaan Baatar.” The conclusion is that it is quite possible. In the meetings, it was proposed that the residents of the Ger district, which is the target of the project, would improve their vegetable-growing techniques by participating in seminars in this project and would increase their income and their sources of income by becoming contract farmers using the seedlings produced in this project.

2.7 Impact of development

With respect to the impact of the project on increasing income, it is estimated that income levels would increase and become closer to the minimum subsistence level (hereinafter referred to as the “MSL”) designated by the government if direct sales were realized as the business model simulating in terms of three cases of strawberries, tomatoes, and cucumbers. The estimate was made based on candidates of potential contract farmers who have the highest and lowest household income among interviewed residents who passed the interview and whose household income was below the lowest standard in the national level.

The extent of increased income is largest in strawberries, which have a high unit price. In a household having the highest income, at the top level of a BOP group, the income would be placed above or close to the MSL by growing strawberries. For tomatoes, increased income exceeded MSL in districts of Nalaikh but remained at 90% in districts of Songinokhairkhan. Cucumbers have a lower effect than strawberries and tomatoes. Among the poorest of BOP groups, the largest impact of growing strawberries was 80% in Nalaikh and 141% in Songinokhairkhan. As a result of those, income rate against MSL will increase from 17% and 9% to 30% and 23%. A large effect can be observed for tomatoes and cucumbers as well. The effects are larger for the poorest than for the top BOP groups.

It is difficult for small-scale farmers to implement direct sales locally by themselves and a large increase in income cannot be expected because of the intervening wholesale and retail processes, even if they sell in the market in UB. However, the business model simulated in this survey can exert impacts on increasing income by direct sales in cooperation with EVERYDAY Supermarket.

